

STANDARDS DEVELOPMENT BRANCH OMOE



36936000010751

W.Q. LIB
MOORE R. (42)



THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

TOWN OF IROQUOIS FALLS

DISTRICT OF COCHRANE

TD
380
.I76
1967
MOE

1967

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca

TD
380
.176
1967

Report on a water pollution
survey of the town of Iroquois
Falls, district of Cochrane.

80849

REPORT

on a

Water Pollution Survey

of the

Town of Iroquois Falls

District of Cochrane

MARCH 1967

Division of Sanitary Engineering

INDEX

<u>SECTION</u>	<u>PAGE NO.</u>
INTRODUCTION	1
I GENERAL	1
II WATER USES	2
1. Municipal Water System	2
2. Industrial Water Supply	3
3. Recreational Uses	3
III WATER POLLUTION	3
1. Sanitary Waste Disposal	3
2. Industrial Waste Disposal	4
3. Discussion of Sample Analyses	5
IV REFUSE DISPOSAL	6
V SUMMARY AND CONCLUSIONS	7
VI RECOMMENDATIONS	7
APPENDIX	
TABLE	
MAP	

R E P O R T

THE ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

A water pollution survey was conducted ~~in~~ the Town of Iroquois Falls on September 20 and 21, 1966. The purpose of the survey was to locate and record all significant sources of water pollution within the town. Such surveys are performed routinely, and upon request, by the Ontario Water Resources Commission as a basis for evaluating all existing and potential sources of pollution. Where sources of pollution are found, corrective action is requested by the Commission. When water and/or pollution control appear desirable or expansions to present facilities are necessary, the Commission has a programme to aid in the construction and financing of these works.

The information received from the town officials and personnel of the Abitibi Power and Paper Company is gratefully acknowledged.

I GENERAL

The Town of Iroquois Falls with a 1966 assessed population of 1,745 (1966 Municipal Directory) is located 44 miles northeast of the Town of Timmins on Highway No. 67 in the District of Cochrane.

Iroquois Falls lies on the west shore of the Abitibi River with the communities of Ansonville and Montrock in the Township of Calvert bordering the town on the south and west, respectively. The

Iroquois Falls Mill of the Abitibi Power and Paper Company is located within the town and economically, the town and the surrounding communities rely on the paper mill.

The general terrain of the area is relatively flat but dropping sharply to the Abitibi River. A heavy clay overburden exists with surface drainage to the Abitibi River which flows north to James Bay.

II WATER USES

1. Municipal Water System

The Abitibi Power and Paper Company Limited owns and operates the water works providing domestic water for the mill, the Town of Iroquois Falls, and the communities of Ansonville and Montrock in the Township of Calvert. The source of supply is the Abitibi River and treatment process consists of coagulation, settling, filtration, and chlorination prior to being delivered to the distribution system. According to an OWRC water works report of September 26, 1966, a total of 228 million gallons or an average 0.625 mgd of water were treated at this plant during 1965. Of this total approximately 55 per cent or 126 million gallons were pumped to the Ansonville and Montrock areas.

Reportedly there are an estimated 5,950 (Iroquois Falls-1,745; Ansonville-Montrock - 4,205) people served by this water supply system with 432 services in the Town of Iroquois Falls and 1,100 in the communities of Ansonville and Montrock.

2. Industrial Water Supply

Abitibi Power and Paper Company Limited - The Abitibi Power and Paper Company employs 1,100 people and is primarily engaged in the production of newsprint from approximately 80 per cent ground-wood and 20 per cent sulphite pulp. In addition, wrapper paper is manufactured from waste cartons and screening rejects. Daily production consists of 925 tons of newsprint, 220 tons of sulphite and 50 tons of wrapper paper. Water for processing purposes is pumped from the Abitibi River by the company and reportedly 24,000,000 gallons of water are utilized daily.

3. Recreational Uses

The Abitibi River is principally used for fishing. There are no public beaches on the river within the Town of Iroquois Falls.

III WATER POLLUTION

1. Sanitary Waste Disposal

(a) Existing Conditions - The Town of Iroquois Falls is serviced by a separate sewer system. A sanitary sewage collection system is provided; however, raw sewage is discharged to the Abitibi River without treatment.

Two separate sanitary sewers outfall to the Abitibi River from the Town of Iroquois Falls. One sewer that collects raw sewage from the community of Montrock traverses the northwest section of the Town of Iroquois Falls and domestic wastes from that section of town also enter the sanitary sewer. The second sanitary collection

system serves the remaining portion of the town.

A third sanitary sewer outfalls to the Abitibi River within the town limits at the paper mill. This collector sewer directs untreated domestic wastes from the community of Ansonville to the Abitibi ground-wood mill where industrial wastes are also discharged to the sewer.

(b) Proposed Water Pollution Control Facilities - The Town of Iroquois Falls has made application to the Ontario Water Resources Commission for provincially-owned sewage works facilities. However, the Commission is withholding further action on the application until the Township of Calvert has reached a decision regarding a possible sewage works programme to serve the communities of Ansonville and Montrock. Sewage works requirements of the Town of Iroquois Falls would then be studied in conjunction with those of the Township of Calvert.

2. Industrial Waste Disposal

Abitibi Power and Paper Company Limited - The wastes from the pulping, drying and paper-making processes are discharged to the Abitibi River via three main sewers: the main mill sewer; the sulphite sewer; and the Ansonville sanitary sewer. The wastes are discharged to the Abitibi River without treatment except for some removal of solids. Coarse bark is burned; however, fines still escape to the river.

The main mill sewer discharges wastewater from the paper mills and the wrapper mill with an average daily flow of approximately 12,000,000 gallons. The second outfall discharges spent sulphite liquor at an estimated flow of 2,000,000 gallons per day. The wood-room sewer and the ground-wood screen-room sewer with a total discharge in excess of 7,000,000 gallons per day are directed to the Ansonville sanitary sewer.

According to the OWRC Industrial Wastes Survey of July, 1966, approximately 20 tons of BOD and 135 tons of suspended solids are being discharged daily to the Abitibi River from the mill.

3. Discussion of Sample Analyses

The laboratory results of the bacteriological examinations and chemical analyses of samples collected from the watercourses and outfalls are included in the table appended to this report. A description of the significance of the laboratory tests and water quality objectives are also appended.

Samples collected from the drainage ditches discharging to the Abitibi River and containing effluents from the municipal sanitary sewer system indicated that the 5-Day biochemical oxygen demands and suspended solids concentrations were in excess of the OWRC recommended maximum objectives of 15 ppm for both analyses. Excessively high coliform counts were also obtained for the reason that no treatment is provided.

The industrial waste discharges from the main mill, and

sulphite sewers from the Abitibi mill were in excess of the Commission objectives. The effluent from the Ansonville sewer containing raw sewage and mill wastes was also above the Commission's recommended limits. A sample of the cooling water discharging from the mill was satisfactory.

Samples were collected from the municipal storm sewers and the results showed that no contaminating wastes were gaining access to the storm sewer system at the time.

The effect of introducing raw sanitary and industrial wastes to the Abitibi River is shown by the results of the upstream and downstream samples. The bacteriological quality of the river upstream from the Abitibi dam was satisfactory and within the OWRC objective of 2,400 coliforms per 100 c.c. However, the downstream sample indicated an exceedingly high coliform count above the Commission's maximum limit for surface waters.

IV REFUSE DISPOSAL

The refuse disposal site is located on Lot 1, Concession 5 in the Township of Calvert. A burn and cover type of operation is employed and no water pollution problems exist as a result.

Both the Town of Iroquois Falls and the Township of Calvert utilize the dump.

V SUMMARY AND CONCLUSIONS

A municipal water pollution survey was made of the Town of Iroquois Falls on September 20 and 21, 1966.

Domestic water for the town is supplied by the Abitibi Power and Paper Company. The town is serviced by a separate sewer system. Sanitary wastes are discharged to the Abitibi River without treatment.

The Abitibi Power and Paper Company is the only industry in town and wastes from this mill are also discharged to the Abitibi River without pre-treatment. However, measures are being taken by the company to improve bark handling and recovery techniques and to reduce ground-wood fibre losses by installing additional refiners.

The Town of Iroquois Falls has applied to the Commission for a provincially-owned sewage works. Further development of the application has been delayed as the Township of Calvert has been asked by the Commission to consider servicing the communities of Ansonville and Montrock with the Iroquois Falls provincial project.

It is concluded that every effort should be made to provide sewage treatment facilities for the Town of Iroquois Falls and the adjacent communities in the Township of Calvert.

VI RECOMMENDATIONS

1. The Town of Iroquois should continue its efforts to provide sewage treatment facilities in the municipality.

2. The Abitibi Power and Paper Company should continue its programme to abate water pollution.

/elc

Prepared by: G.K. Boretski
G.K. Boretski, Civil
Technologist,
Div. of Sanitary Engineering.

APPENDIX

WATER QUALITY AND EFFLUENT OBJECTIVES

The OWRC objectives for surface waters in Ontario are as follows:

5-Day BOD - not greater than 4 ppm
Total Coliform Count - not greater than
2,400 coliforms per 100 c.c.
Phenolic Equivalents - average - not greater
than 2 ppb
maximum - not greater
than 5 ppb
pH Range - 6.7 to 8.5

A few pertinent maximum limits of contaminants in storm sewers, sewage treatment plant and industrial waste effluents are listed below. Adequate protection for surface waters, except in certain specific instances influenced by local conditions, should be provided if the concentrations and pH range are not exceeded.

5-Day BOD - not greater than 15 ppm
Suspended Solids - not greater than 15 ppm
Phenols - not greater than 15 ppm
pH - 5.5 to 10.6
Iron - not greater than 17 ppm
Ether Solubles (oil) - not greater than 15 ppm

GLOSSARY OF TERMS

Bacteriological Examinations - The Most Probable Number technique is used by the Ontario Department of Health to obtain an approximation of the actual number of coliform organisms present. These organisms are the normal inhabitants of the intestines of man and other warm-blooded animals. They are always present in large numbers in untreated sewage and are, in general, relatively few in number in other stream pollutants.

Biochemical Oxygen Demand (BOD) - The biochemical oxygen demand test indicates the amount of oxygen required for stabilization of the decomposable organic matter found in sewage, sewage effluent, polluted waters, or industrial wastes, by aerobic biochemical action. The time and temperature used are five (5) days and 20 °C, respectively.

Solids - The analyses for solids include tests for total, suspended, and dissolved solids. The total solids is a measure of the solids in solution and in suspension. Suspended solids indicate the measure of undissolved solids of organic or inorganic nature whereas the dissolved solids are a measure of those solids in solution.

Oils and Ether Soluble Materials - These include oils and all other ether soluble materials such as tarry substances and greases. The presence of these pollutants renders water difficult and sometimes impractical to treat either for industrial or domestic use. Oils make streams unsightly and water unfit for bathing.

Phenolic Compounds - Phenols react with chlorine to produce intensely aromatic compounds. These compounds, even when highly diluted, may give a taste and odour to the water which is variously described as medicinal, chemical, or iodoform. Phenols taint fish and are toxic to fish, depending on the concentration. Normal water contains no phenolic compounds.

ABS (Alkyl Benzene Sulfonate)

The alkyl benzene sulfonate portion of the anionic detergents is reported in ppm. The test is generally employed to indicate the presence of illegal discharge of waste water to storm drains.

The popular use of synthetic detergent for general cleaning purposes has resulted in the incidence of residual ABS in streams. As an objective, the ABS concentration should not exceed 0.5 ppm in water used for domestic purposes.

TOWN OF IROQUOIS FALLS

OUTFALL AND STREAM SAMPLING

SAMPLING POINT NO.	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS		DISS. (PPM)	ANIONIC DETERGENTS AS ABS	MPN		EST. DWF MGD	REMARKS
				TOTAL (PPM)	SUSP. (PPM)			TOTAL COLIFORM ORGANISMS PER 100 c.c.	E. COLI PER 100 c.c.		
MA-198.6	ABITIBI R. AT BRIDGE TO TWIN FALLS.	SEPT. 21/66	0.8	122	12	110	-	24,000	1,500		
MA-198.8 S	DRAINAGE DITCH CON- TAINING SANI- TARY WASTES FROM MONTROCK & IROQUOIS FALLS.	SEPT. 21/66	70	574	112	462	-	24,000,000	24,000,000		
MA-198.8 W	STORM SEWER AT ESSEX AVE. & EIGHTH ST.	SEPT. 20/66	3.6	1034	8	1026	0.0	15	3.6		
MA-198.9 S	DRAINAGE DITCH CONTAINING SAN- ITARY WASTES FROM IROQUOIS FALLS.	SEPT. 21/66	96	558	116	442	-	24,000,000	24,000,000		
MA-199.6 W	STORM SEWER AT ARGYLE AVE. AND SIXTH ST.	SEPT. 20/66	1.8	772	2	770	0.0	210	0		
MA-199.8 PS	SANITARY SEWER FROM ABITIBI PAPER MILL.	SEPT. 21/66	11.0	178	42	136	-	24,000,000	24,000,000		
MA-199.8 I-1	COOLING WATER FROM ABITIBI MILL.	SEPT. 21/66	1.2	136	4	132		9.1	3.6		

TOWN OF IROQUOIS FALLS

OUTFALL AND STREAM SAMPLING

SAMPLING POINT NO.	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS			ANIONIC DETERGENTS AS ABS	MPN		EST. DWF MGD	REMARKS
				TOTAL (PPM)	SUSP. (PPM)	DISS. (PPM)		TOTAL COLIFORM ORGANISMS PER 100 c.c.	E. COLI PER 100 c.c.		
MA-199.9 I-2	MAIN MILL SEWER FROM ABITIBI MILL.	SEPT. 21/66	-	1208	682	526	-	4,300	2,400	12,000,000	
MA-199.9 I-3	WASTE SULPHITE LIQUOR FROM ABITIBI MILL.	SEPT. 21/66	4400	15134	332	15772	-	0	0	2,000,000	
MA-199.9 S _p I-4	ANSONVILLE SANITARY SEWER.	SEPT. 21/66	130	1195	1010	186	-	24,000,000	240,000	7,000,000	EFFLUENT ALSO ONLY FROM MILL
											CONTAINS WASTES FROM GROUND-WOOD MILL.
MA-200.0	ABITIBI RIVER UPSTREAM FROM DAM.	SEPT. 21/66	1.8	102	7	95	-	93	9.1		
MA-200.4 W	STORM SEWER NORTH-EAST OF CURLING RING.	SEPT. 21/66	2.0	560	2	553	0.0	7.3	0		